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# When Wise Men Experiment

## *An Exposé of the Scientific Method* *By Ira Ratow, Northwestern University*

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IT was high noon in New York and low tide in Evanston as I walked wearily into the E. E. lab for another afternoon of "experimenting." I had digested the day's instruction sheet along with my lunch and was fortified with an air of ignorance concerning the afternoon's proceedings. Stepping into the mysterious sanctum of whirling gadgets, I was greeted by a smug delegation—my partners in crime. Collectively we were referred to as a party in the tradition of perverted nomenclature. With smirks of self satisfaction they pointed at me and announced in semi-hysterical tones "You are Chief Today." I groaned and bowed my head before the oracle of Fate. My time had come. My number was up. I was king for a day—but what an empty triumph.

Somehow the afternoon passed. No, it didn't pass—it engulfed us in stupefying confusion. The five of us were becalmed in the midst of a sea of ignorance. Strangely, all the wrong connections, forgotten safety precautions, misunderstood instructions, and erroneous readings added up to data, which, when later combined with calculation mistakes, produced a result that was acceptable to the gods who dole out grades. I staggered home that evening with a very feeble confidence in luck to help alleviate my stupidity. By next morning I had forgotten the trial by error of the preceding afternoon. I bolted my breakfast, sprinted for the train in fair form and spirits, and strolled into my first class—an E. E. lecture—with my usual punctuality (five minutes after the hour). I glanced toward the lecture desk and Lo, the spirit returneth! There assembled in a familiar heap—a revengful, silent monster—stood the very same junk that had thwarted our best attempts yesterday. I slid into my seat feeling the awe that numbs a youngster seeing his first mystery thriller. In a few minutes the professor had performed the experiment with ease and dexterity, confidence and clarity. I was too thunderstruck to speak as I groped for a hole to fall through. There was too much in this for me; supernatural forces had done the trick. I could explain it no other way.

Then, in the midst of my depression, I heard the professor say, "When I was checking this

setup last night..." That was it!! Of course!! He worked on it last night until it was perfect! A grim green thought pressed my mind for a hearing. I was not satisfied with this glib performance. It was too smooth to be authentic. But, it would not go without question. I would sneak into the lab some night and see how the prof. did the experiment for the first time. Furthermore, I would photograph the event and reveal my findings to all. Maybe these smooth demonstrations were hewn from rough starts. Hmmmm.

As there was to be a lecture-demonstration the next day, I decided to hide in the lab that night. So five o'clock found me cramped in a transformer case with camera, sandwiches, ten cokes, and a can-opener to let me out of the transformer case. I could see and photograph the entire lab and the clock on the wall through the holes in the case. At about 5:30 the prof. entered. My heart began to resonate at 60 cycles. Then he connected several dozen wires (it was to be a simple test), checked the arrangements and left. I sank to the bottom of my prison in dark dismal despair. So it was on the level after all. "Well, one stiff back for nothing" I murmured, and began to extricate myself, when I heard voices. A Navy radio class flooded the lab and began to prove Ohm's Law the hard way. I couldn't leave then without getting involved in a fishy sounding explanation, so I opened a few cokes and waited.

Forty-nine broken ammeters and three cokes later, the Navy sailed away and I renewed my efforts at escape when the gleam of a flashlight pierced the darkness of the lab. My heart contracted as a figure treaded toward me. It was a man in a dark overcoat, hat pulled down low over his eyes. Despite the noise the clatter of my teeth made, my mind was at work. Perhaps this was a saboteur, a Nazi spy. With my camera I could get the goods on him. Maybe get a medal. But he might catch me watching him. No, I mustn't think of that. Temporarily in the throes of frightening conjecture, all I could do was watch and listen.

Pulling down all the blinds first, the man of

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mystery snapped on the lights and carefully put down his briefcase. What's that? A briefcase!! Maybe it's full of bombs!! A look at his face interrupted my monologue on "Lord, I is too young to die." For I recognized him as my professor, who had prepared the demonstration a few hours ago. Fascinated, I watched him pull out a set of six huge reference books and a set of jeweler's tools from his briefcase.

He began the experiment at 9:30 P.M. By 10:00 he was taking down readings and plotting the same at 10:30. At 10:45 he exercised his vocabulary and checked connections. Five major changes in the set-up and he went back to work looking a little grimmer than before. At 11:35 he examined his revised graph, and I tittered at the result which closely resembled a road map of Spain. While tearing out his hair, in the interval of calm and collected thought that followed, he smashed a voltmeter, and a circuit breaker extinguished the lovely blue arc his antics had started. To close the circuit again, the breaker had to be reset. It was buried four fathoms down in a sea of wires, and the prof. finally located it by the simple expedient of rolling up his trousers, removing a shoe and sock, and then probing barefooted in the knotted miscellany. The skill with which this unorthodox maneuver was executed indicated that it was by no means the maiden attempt. He was suddenly seized by violent convulsions—apparently contact had been made. These gyrations ended with the jerky reappearance of an electrically toasted toe. There followed a period of vocal gymnastics after which he assembled his remaining crumbs of sanity and went back to work. No longer quick and smooth in his movements, he panted and heaved, working with a slow forced deliberateness that reflected his extreme tenseness. It was 12:30 before he finished checking and rechecking the wiring. By now his face was a drained white, flecks of foam spurted from his mouth, and his frame convulsed periodically. With cold driving motions that reminded me of Peter Lorre knifing a man, he twisted the knobs and wrote down readings. At 1:30 the data was plotted and he held it up to the light. I sighed in sympathy with him for he was indeed making progress. The new graph resembled modernistic wallpaper. When his dulled mind received the impression that he was almost through, he straightened up and laughed uncontrollably as if tickled by a feather. Then he jumped up and down, clapped his hands, and gurgled. The sight absorbed me so that I drank a coke without uncapping the bottle.

He gained normalcy soon, however, and 2:00 A.M. found him humming nursery rhymes as he opened the case of jeweler's instruments and began a strange operation. This new process continued for some time before I could understand it. He would adjust the controls of the apparatus, examine the readings of the meters, glance at the data sheet of the previous run, and then remove the case of the meter and tinker with the mechanism. Sometimes he would change the zero adjustment or stuff a splinter of wood in the meter movement. Other operations involved tying the needle down with thread on adjusting the spring with a wad of chewing gum. Then my cola-laden mind fizzed with light! He was fixing the meters to read in accordance with the answers in the back of the book. "The sly dawg," I thought. "This is just the old salted gold mine swindle." This then was the answer to the "Scientific Method." This was the underhanded way in which professors kept up their prestige. My ire was too big for my hiding place, and my eyes glazed with rage, distorting my vision until what I saw had the appearance of a hateful beast.

At 2:47 the crime was finished. By 3:00 he had checked the finished setup with a trial run, and his face broadened into a smile. He gained some of his normal composure and I saw before me a very tired man. He bandaged his toe and washed his hands with slow strained movements and went into the instrument room with his jeweler's tools. From my hiding place I could see very little but he remained in the instrument room until 3:57. From time to time, however, I heard snatches of a mumbled monologue accompanied by sadistic chuckles, all of which seemed to indicate more operating. I heard such bits as "There! That'll throw them off at least 20%." "Just wait till they try to connect this one up," and "It'll take them a whole lab period to trace this open connection. Hee, Hee!"

At 4:04 the prof. left the library humming "I'm dreaming of a burned ammeter," and I removed myself and wended my weary way home.

Next morning, after E. E. class, a few of the boys were discussing the demonstration. "Boy, he certainly can pull off a smooth experiment," said a wide-eyed 2.00 man. It's not a matter of skill, rather it's the result of years of hard work and experience," postulated a 7.00 man.

"There's one born every minute and sometimes they're born twins," I quoted; but they didn't understand.